UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
07/580,246	09/10/1990	DONALD R. HUFFMAN	7913Z	5441

23389 7590 05/16/2008

SCULLY SCOTT MURPHY & PRESSER, PC
400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER	
TSANG FOSTER, SUSY N	

ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
05/16/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	07/580,246	HUFFMAN ET AL.	
	Examiner	Art Unit	
	SUSY N. TSANG FOSTER	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *54-65,67-70,72,73,75,84,85,89,90,92-95,141-157,162,165 and 166* is/are allowed.

6)☒ Claim(s) *80,81,86,96,104-107,111-114,119,122-132,167 and 168* is/are rejected.

7)☒ Claim(s) *53,66,71,102,103,169 and 170* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Continuation of Disposition of Claims: Claims pending in the application are 53-73,75,80,81,84-86,89,90,92-96,102-107,111-114,119,122-132,141-157,162 and 165-170.

Declarations Pursuant to 37 CFR 1.132

1. This Office Action is responsive to the Declarations from Drs. Kroto, Terrones, and Darwish submitted under 37 CFR 1.132 on 7 September 2007. These declarations provide persuasive evidence that the instant application complies with the requirements of 35 U.S.C. 112, first paragraph regarding the term "macroscopic amount" in the instant claims. Although the original disclosure of the instant application does not provide ipsis verbis support for the term "macroscopic amount," the Terrones Declaration (reproducing the process of making the product) and the Darwish Declaration (purification of the product) clearly show production and extraction of a macroscopic amount of C_{60} and C_{70} following the same procedures described in the instant specification, specifically in Examples 1 and 2. These declarations provide evidence that the procedures described in the instant application inherently produce macroscopic amount of C_{60} and C_{70} and enable one of ordinary skill in the art to do so without undue experimentation.

Response to Amendment

2. Claims 53-73, 75, 80, 81, 84-86, 89, 90, 92-96, 102-107, 111-114, 119, 122-132, 141-157, 162, and 165-170 are pending in this application. Claims 53, 66, 71, 102, 103, 169, and 170 are objected to. Claims 54-65, 67-70, 72, 73, 75, 84, 85, 89, 90, 92-95, 141-157, 162, 165, and 166 are allowed. Claims 80, 81, 86, 96, 104-107, 111-114, 119, 122-132, 167, and 168 are rejected for the reasons given below.

Duplicate Claim Objections

3. Based upon applicant's remarks throughout prosecution history in copending application 08/236,933 and in the instant application, the terms "solid" and "macroscopic amounts" are considered equivalent.

For example, in applicant's appeal brief filed on May 9, 2001 in copending application 08/236,933, applicant states the following on pages 18-19:

> " …if the C_{60} product were prepared in macroscopic amounts, the C_{60} would be in sufficient quantity to be seen and perceived as a solid. Thus, the meaning of 'solid' in Claim 181, especially when read in light of the specification is clear; sufficient product is formed so that it is perceived as a solid."

From this statement on pages 18-19, applicant is equating the term "solid" to mean "macroscopic amounts."

Furthermore, in the applicant's appeal brief filed on March 10, 2005 in the instant application, applicant states the following on page 36:

> "Moreover, applicants respectfully submit that the Kroto, et al. article is non-enabling to make fullerenes, e.g., C_{60} or C_{70} in macroscopic amounts or language equivalent thereto, e.g., solid form, as a solid, in macroscopic amounts or in equivalent language."

Page 35 of the same appeal brief filed on March 10, 2005 also states:

> "Thus, Curl, et al., on commenting about the experiments described in Kroto, et al. admit that they could not make enough to collect the fullerenes as a solid or in solid form or in macroscopic amounts or equivalent language thereto."

From these statements in the appeal brief filed on March 10, 2005 in the instant application, applicant admits that the terms "solid", "in solid form", and "in macroscopic amounts" are equivalent language.

In light of applicant's remarks above, the following claims are objected to as being duplicate claims:

Claims 71, 102, 103, 169, and 170 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 84, 85, 90, 165, and 166 respectively. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Additional Claim Objections

4. Claims 53, 66 and 132 are objected to because of the following informalities:

In claim 53, the limitation "carbon product form the collecting substrate" should be "carbon product from the collecting substrate".

In claim 66, the limitation "dissulfide" should be "disulfide"

In claim 132, the pressure range of 60 torr to 400 torr appears to be inconsistent with the range disclosed in the original specification and appears to be a typographical error. The specification discloses a pressure range of 50 torr to 400 torr.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 80, 86, 96, 104, 106, 111-114, 119, 122-132, 167, and 168 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 80, 86, 96, 104, 106, 111-114, 119, 122-132, 167, and 168 are rejected under 35 U.S.C. 101 because the invention as claimed reads on coal deposits found in nature as evidenced by Fang et al., "Evidence for fullerene in a coal of Yunnan, Southwestern China", Mat. Res.

Innovat. (1997), pp. 130-132 and Osawa et al., "Survey of Natural Fullerenes in Southwestern China", pp, 421-424 in Nanonetwork Materials, edited by S. Saito et al., 2001, American Institute of Physics.

Fang et al. discloses that C_{60} and C_{70} are found in macroscopic amounts in coal specimens from China (see Table 1). Table 1 shows 17 mg of fullerene collected from coal specimen K with C_{60} present at a concentration of 74% and C_{70} present at a concentration of 24%. The concentration of fullerene in the coal specimen K was 2.6×10^{-4} (260 ppm). Table 1 also shows 4 mg of fullerene collected from coal specimen B with C_{60} present at a concentration of 85% and C_{70} present at a concentration of 15%.

Osawa et al. also found an usually high concentration of C_{60}/ C_{70} in a coal sample from the same coal mine in China (see abstract). Osawa et al. found 30 ppm of C_{60}/ C_{70} in the coal sample by HPLC analysis (p. 421). The contents of C_{60}/ C_{70} are considerably lower than reported by Fang et al. (Fang et al., "Evidence for fullerene in a coal of Yunnan, Southwestern China", Mat. Res. Innovat. (1997), pp. 130-132), but still several orders of magnitude higher than the previously reported levels of other natural fullerenes (order of sub-ppm) and sufficient to indicate macroscopic amounts of C_{60}/C_{70} in the coal mine.

Furthermore, according to the Declaration of Raouf O. Loutfy dated July 16, 2002 and filed in 07/580,276, Dr. Loutfy states on page 7 that 0.1 milligram or 100 micrograms is a macroscopic amount of fullerene that can still be seen with the naked eye.

Applicant's claims as written do not exclude or distinguish from the naturally occurring fullerenes in the coal deposits of Yunnan, China. There is no evidence in the record that establishes that Applicant's C_{60} and C_{70} differ in form, quality or properties from naturally occurring C_{60} and C_{70}.

The product-by-process limitations of claims 119, and 123-132 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)). Thus, absent any evidence that the product of Applicant's process as claimed is different from naturally occurring C_{60} and C_{70}, these claims are likewise seen as claims which do not distinguish from the naturally occurring products.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 80, 81, 86, 96, 104-107, 111-114, 119, 122-132, 167, and 168 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kappler et al. (J. Appl. Phys. 50 (1), 1979, pp. 308-316) as evidenced by Kratschmer et al. ("Search for the UV and IR Spectra of C_{60} in Laboratory-Produced Carbon Dust," in Dusty Objects in the Universe (Netherlands, Kluwer Academic Publishers, 1990), E. Bussoletti and A.A. Vittone (eds.), pp. 89-93) and Smalley (US Patent No. 5,227,038).

Kappler et al. discloses a method of producing carbon vapor by electrically heating graphite rods at 100-110 amps under an atmosphere of 30 torr of argon (p. 308, col. 2; p. 309, col. 1; p. 310, col.1 and col. 2). The graphite rods are 3 mm in diameter and 2 cm (20 mm) long (p. 308, col. 2). Carbon particles are deposited on the Pyrex wall of the evaporation apparatus at a distance of 4 cm from the vaporization source (p. 310, col. 1). Evaporation of the carbon is carried out by alternative periods of heating (2 min) and cooling (30 minutes) of the graphite rods (p. 309).

The method of Kappler et al. inherently produces carbon particles containing macroscopic amounts of C_{60} and C_{70} because the method of Kappler et al. is nearly identical to the method disclosed by applicant (see also declarations filed by applicant on September 2007) to produce macroscopic amounts of C_{60} and C_{70}. As disclosed by applicant in the instant specification, a pressure range of 50 torr to about 400 torr produces C_{60} and C_{70} (pages 4 and 6 of the instant specification).

While Kappler et al. discloses using 30 torr of argon instead of 50 torr of argon, Kratschmer et al. discloses that a lower argon pressure compared to helium pressure is needed to produce C_{60}. Kratschmer et al. discloses that 30 torr is the lower pressure limit for argon to produce detectable features of C_{60} in an infrared or ultraviolet spectrum of carbon smoke while 50 torr is the lower pressure limit for helium to produce detectable features of C_{60} in an infrared or ultraviolet spectrum of carbon smoke (pp. 91-92). Specifically, Kratschmer et al. discloses the following on pages 91-92:

> "As far as the appearance of the features is concerned, we observed that a kind of transition pressure of the quenching gas exists above which the features appear regularly and below which they usually do not. For He, this pressure is about 50 torr and for Ar it seems to be smaller, i.e. about 30 torr."

In addition to using an equivalent quenching pressure of the inert gas as applicant (applicant uses helium in the examples in the instant specification and Kappler et al. uses argon),

Kappler et al. also uses the same electrical current (100 A) for evaporating the graphite rods and about the same collection distance (4 cm) from the vaporization source to collect the carbon particles (sooty carbon product) that inherently contain C_{60} and C_{70}. Applicant uses ¼ in. (6.35 mm) diameter rods that are 1 cm in length. The volume of a cylinder is $\pi r^2 h$. Although the volume of the rod used by Kappler et al. is about half that of applicant, macroscopic amounts of C_{60} and C_{70} would be inherently produced by the method disclosed by Kappler et al. since the lower limit that can be seen with the naked eye is 0.1 mg (see Declaration of Raouf O. Loutfy dated July 16, 2002 and filed in 07/580,276, that states on page 7 that 0.1 milligram or 100 micrograms is a macroscopic amount of fullerene that can still be seen with the naked eye). The method of Kappler et al. inherently produces more than 0.1 mg of C_{60}/C_{70} since applicant's method produces more than 0.2 mg of C_{60}/C_{70} according to the declarations filed by applicant on September 2007.

As further evidence that the method disclosed by Kappler et al. inherently produces C_{60} and C_{70}, Smalley et al. discloses that fullerene is formed at 10 to 500 amps at 10 to 50 volts (col. 4, lines 18-21) and the pressure needed ranges from 1 to 20,000 torr, preferably 5 to 2000 torr and preferably 50 to 500 torr of helium (col. 5, lines 3-8). As shown in Table 1 of the Smalley reference, lower pressures of argon are used compared to helium to generate fullerenes. At 25 torr of Ar, the amount of fullerene yield is 5.2 wt% of the soot (col. 10, lines 58-65).

The product-by-process limitations of claims 119, and 123-132 are not given patentable weight since the courts have held that patentability is based on a product itself, even if the prior art product is made by a different process (see In re Thorpe, 227 USPQ 964, (CAFC 1985), In re Brown, 173 USPQ 685 (CCPA 1972), and In re Marosi, 218 USPQ 289, 292-293 (CAFC 1983)).

It is noted that Dr. Harold Kroto in his declaration dated 9 June 1995 addressed the Kappler et al. reference by stating that he did not believe that the method produced C_{60}. However, Dr. Kroto did not give any scientific explanation as to why C_{60} or any fullerene would

not inherently be produced by the method disclosed by Kappler et al. Therefore, absent factual evidence, Dr. Kroto's conclusory statement regarding the Kappler et al. reference is not persuasive.

It is noted that Smalley and Kratschmer et al. are cited as evidentiary references and not as prior art. See MPEP 2124 for exception to the rule that the critical reference date must precede the filing date.

10. Claims 80, 81, 86, 96, 104-107, 111-114, 119, 122-132, 167, and 168 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over J. Lefevre, "Investigation of Iron and Carbon Dusts," Annales D'Astrophysique, Vol. 30, No. 4, pp. 731-738, 1967, as evidenced by Liu et al., "Experimental Results on High Yield C_{70} Fullerene," Chin. Phys. Lett., Vol. 11, No. 10 (1994), pp. 609-610, Smalley (US Patent No. 5,227,038), and Rietmeijer et al. "C_{60} and Giant Fullerenes in Soot Condensed in Vapors with Variable C/H_2 Ratio", Fullerenes, Nanotubes, and Carbon Nanostructures, Vol. 12, No. 3, pp. 659-680, 2004.

Lefevre discloses producing carbon dusts by having an electric arc discharge in argon (p. 2 of translation). The method of producing the carbon dusts comprised of using a stable electric arc between two carbon electrodes in a twenty-liter container (see pp. 2-3 of translation). The container is first evacuated and then filled with argon (an inert quenching gas) at atmospheric pressure (1 atmosphere) and then emptied and filled again with argon at atmospheric pressure (1 atmosphere), see pages 13-14 of translation. The electric arc vaporizes the carbon electrodes and then condensation takes place to form the carbon dusts (p. 14 of translation). The arc is stabilized by a 3 kW rheostat corresponding to an intensity of 15 A under a potential difference of 20 V (see p. 4 of translation). The dusts produced are collected for examination on standard electron microscope grids at varying distances from 10 to 15 cm from the arc (p. 3 of translation).

Lefevre's disclosed method for producing carbon dusts inherently produces macroscopic amounts of C_{60} and C_{70} as evidenced by applicant's specification, Liu, Smalley and Rietmeijer et al. for reasons given below.

Applicant states on page 4 of the instant specification:

> "In the production of C_{60} and C_{70}, any procedure for vaporizing carbon can be used, although the preferred method relies on the use of a high intensity electrical current with graphite rods as electrodes...The rods can be prepared using any of the various forms of carbon, such as graphite, amorphous and glassy carbon.
>
> The inert quenching gas can be any of the usual inert gases such as the noble gas. Argon and helium are preferred, the latter being most preferred…The amount of C_{60} and C_{70} produced from this carbon source is dependent upon the pressure of the quenching gas. At lower pressures relatively pure C_{60} molecules can be produced in high yield with minor concentrations of C_{70}. For the production of predominantly C_{60} molecules, the pressure at which the quenching gas is maintained should be subatmospheric and preferably about 50-400 torr. Especially preferred is a pressure of approximately 100 torr. The use of any lower pressure may result in reduced yield of C_{60}.
>
> However, as the pressure is raised, the ratio of C_{70}:C_{60} is also increased. If the pressure is increased to at least two atmospheres, the greatest percentage of C_{70} product is formed."

While applicant discloses the optimum range for producing C_{60} is less than 1 atmosphere, applicant discloses that if the pressure is increased to at least two atmospheres, C_{70} would be the dominant product but C_{60} would also be present. It is noted that Dr. Adam Darwish in his September 2007 Declaration filed in the instant application stated that macroscopic amounts of C_{60} and C_{70} were produced at 2 atmosphere of the inert gas pressure. Thus, at 1 atmosphere of argon used by Lefevre, it is expected that macroscopic amounts of C_{60} and C_{70} would be inherently present in the carbon soot produced by Lefevre.

Smalley et al. discloses that fullerene is formed at 10 to 500 amps at 10 to 50 volts (col. 4, lines 18-21) and the pressure needed ranges from 1 to 20,000 torr, preferably 5 to 2000 torr and preferably 50 to 500 torr of helium (col. 5, lines 3-8). As shown in Table 1 of the Smalley reference, lower pressures of argon are used compared to helium to generate fullerenes. Thus, Smalley provides evidence that C_{60} and C_{70} are formed when the electrical current is at 15 A and the pressure of the inert gas in the reactor is 1 atmosphere in the method disclosed by Lefevre.

Furthermore, Liu et al. discloses producing C_{60} and C_{70} using an electric arc discharge between two electrodes at an electric current of 35-45 A at an inert gas pressure of 158 torr (21000 Pa), see p. 609. Liu et al. discloses that their method produces a large amount of C_{70} for manufacturing optical devices and carrying out other research work (last paragraph on p. 610).

Rietmeijer et al. discloses producing carbon particles containing C_{60} using an electric arc discharge between two amorphous carbon electrodes at electrical current of 10 A (p. 661) and in an atmosphere of 7 torr (10 mbar) of argon (p. 661). In sample 1, the vaporization of the carbon was conducted in 100% argon without any hydrogen present and the collector surface was located 5 cm from the source (p. 662). C_{60} was found in sample 1, and C_{70} was not found in sample 1 (p. 670). The absence of C_{70} is most likely due to the low pressure of argon (7 torr).

Therefore, as evidenced by Smalley, Liu et al., and Rietmeijer et al., C_{60} and C_{70} can be produced at a wide range of current values below 100 A and are expected to be produced at a current of 15 A in the method disclosed by Lefevre.

It is noted that Smalley, Liu et al. , and Rietmeijer et al. are cited as evidentiary references and not as prior art See MPEP 2124 for exception to the rule that the critical reference date must precede the filing date.

Allowable Subject Matter

11. Claims 54-65, 67-70, 72, 73, 75, 84, 85, 89, 90, 92-95, 141-157, 162, 165, and 166 are allowed. Claims 53 and 66 would also be allowed if the claim objections above are addressed.

12. The following is a statement of reasons for the indication of allowable subject matter:

With respect to claims 73, 75, 92-95, 165, and 166, the closet prior art of record (Fang et al., Osawa et al., Kappler et al., and Lefevre et al.) do not disclose, teach, or suggest crystalline C_{60} or C_{70}.

With respect to claims 84, 85, 89, and 90, the closest prior art of record (Fang et al., Osawa et al., Kappler et al., and Lefevre et al.), do not disclose, teach, or suggest substantially pure C_{60}, substantially pure C_{70}, substantially pure solid C_{60}, or substantially pure solid C_{70}.

With respect to claim 53 and its dependent claims, the closest prior art of record does not disclose, teach or suggest a solid carbon product comprising C_{60} in a macroscopic amount wherein the C_{60} is recovered from a sooty carbon product by contacting the sooty carbon product with a non-polar solvent that dissolves the C_{60} molecules. The non-polar solvent effectively extracts the C_{60} molecules from the sooty carbon product. Neither Kappler et al. nor Lefevre et al. disclose, teach, or suggest extracting C_{60} from the sooty carbon product by using a non-polar solvent to dissolve the C_{60} molecules. The C_{60} or C_{70} found in the coal samples of Fang et al. and Osawa et al. are not found isolated or purified in nature.

With respect to claim 141 and its dependent claims, the closest prior art of record does not disclose, teach, or suggest a solid carbon product prepared by subliming the carbon product from a sooty carbon product and condensing the sublimed carbon product comprising C_{60}.

Neither Kappler et al. nor Lefevre et al. disclose, teach, or suggest subliming C_{60} from the sooty carbon product or separating the C_{60} to any degree from the sooty carbon product. The C_{60} or C_{70} found in the coal samples of Fang et al. and Osawa et al. are not found isolated or purified in nature.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Howard et al. (US 5273729 A) discloses synthesizing macroscopic amounts of fullerene using the flame method.

14. Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/

/Susy N Tsang-Foster/

Supervisory Patent Examiner, Art Unit 1795